A National Perspective on Gaps in Coastal Data

Richard Seymour, Ph.D.
Scripps Institution of Oceanography

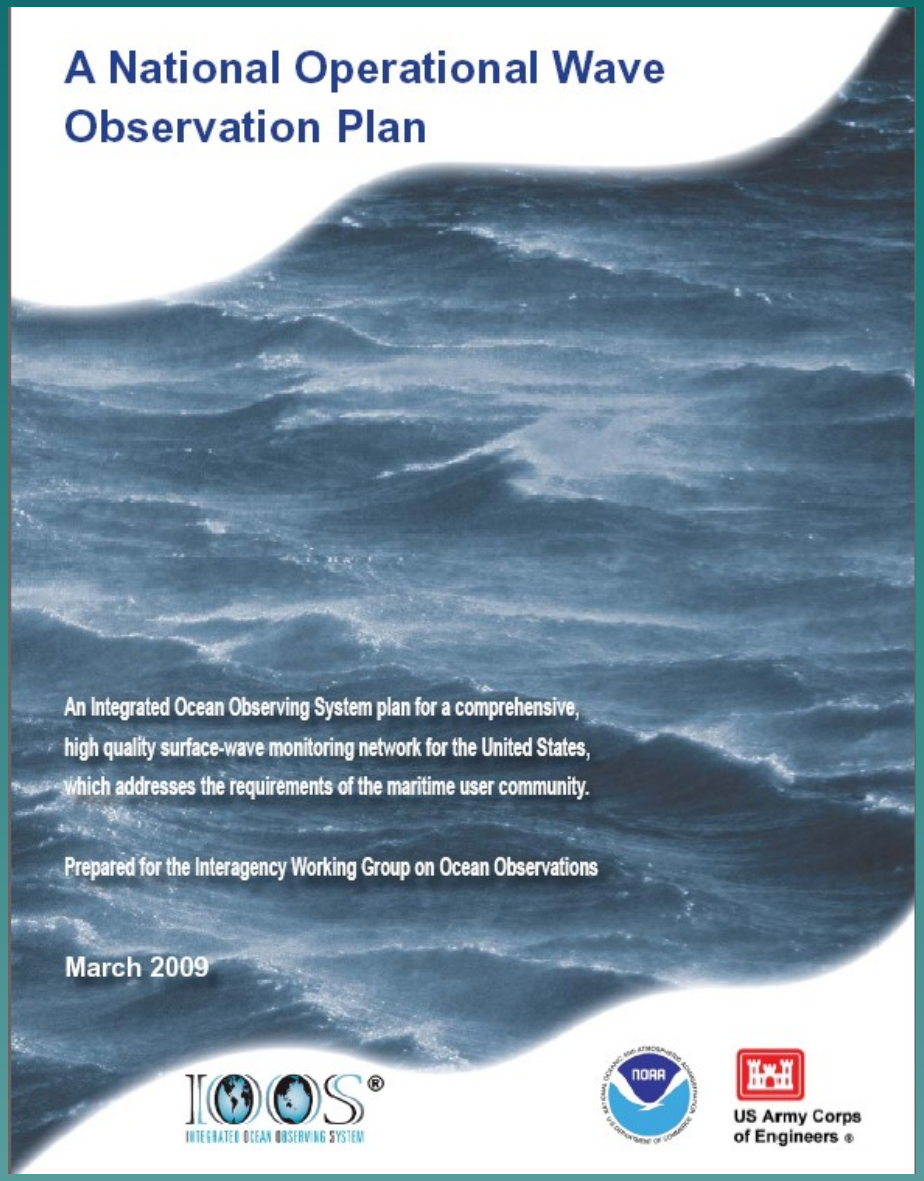
Member, Coastal Engineering Research Boa

What Gaps? What Data?

USACE Coastal Data Needs

- NOT temperature, salinity, currents, plankton density, winds or color
- NEED local wave energy and directional spectra
- NEED water level
- NEED regional scale erosion and accretion
- NEED quality data sets of these for model development and validation

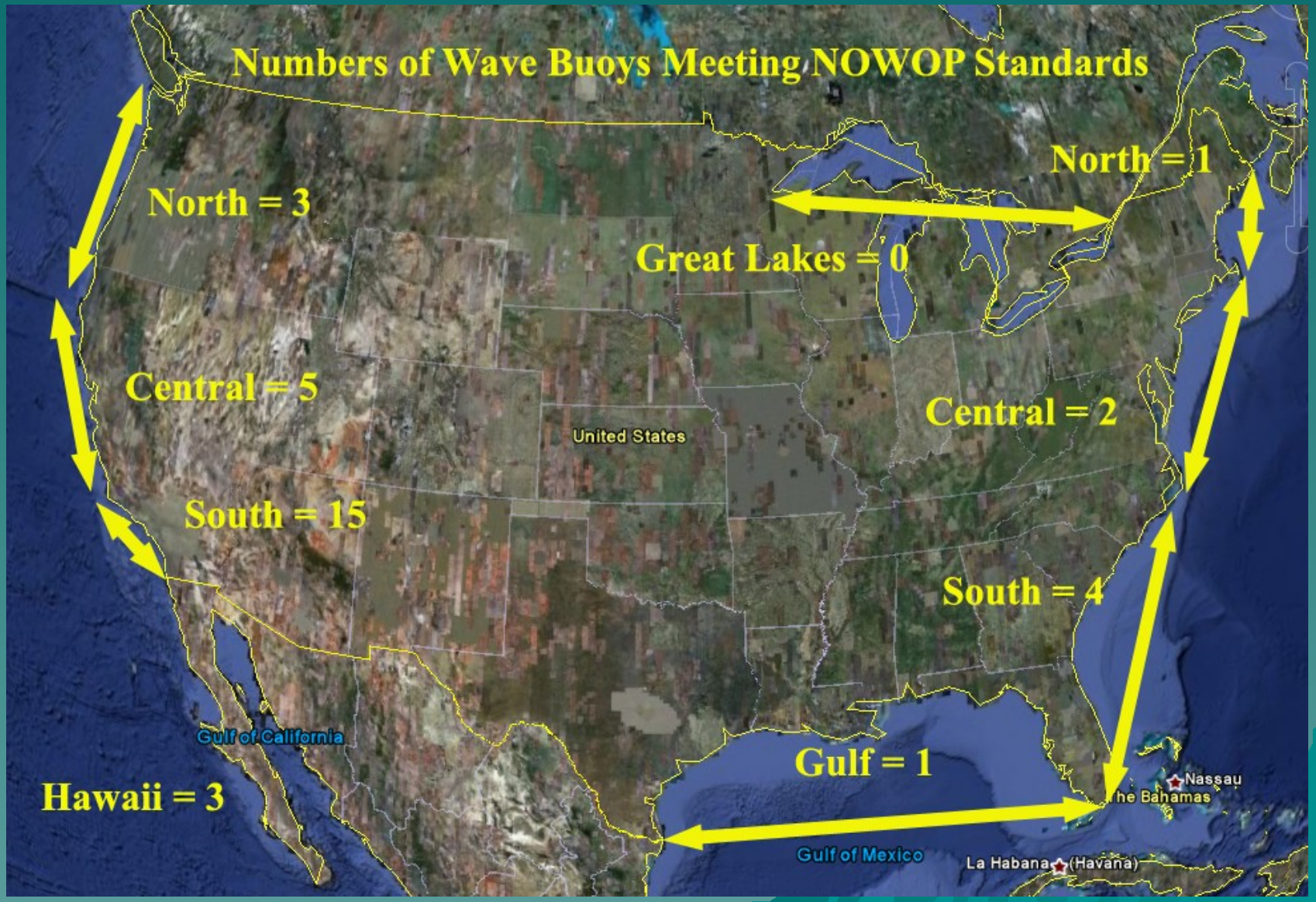
Progress Towards Wave Data


A National Operational Wave Observation Plan
An Integrated Ocean Observing System plan for a comprehensive, high quality surface-wave monitoring network for the United States, which addresses the requirements of the maritime user community.
Prepared for the Interagency Working Group on Ocean Observations
March 2009
IOOS®
INTEGRATED OCEAN OBSERVING SYSTEM
NOAA
US Army Corps of Engineers ®

Requirements:
First-5
Capability
Near-
Continuous
Calibration and
Validation

Cost:
$14M year 1
$17M following

What are the Wave Data



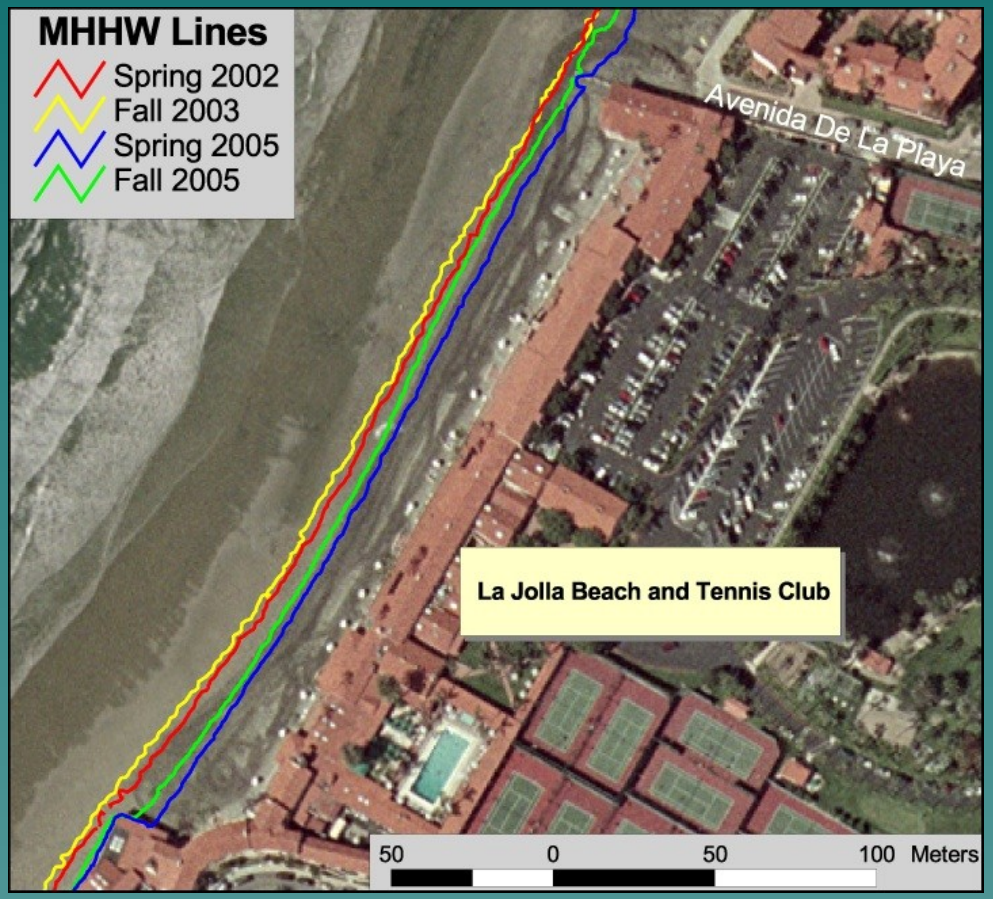
The NOWOP Score Today

- West of the Mississippi 27 buoys
- East of the Mississippi 8 buoys
- Total in the NOWOP plan 296 Buoys
- The gap is huge

National Shoreline Management Study

- Authorized as part of WRDA99
- Meant to provide a complete National atlas of shoreline type and condition
- The underpinning for RSM
- USACE the lead agency with support to come from many federal agencies
- STATUS 10 years later: essentially unsupported and never completed.

Coastal Change Data



LIDAR surveys provide regional scale data on shoreline configuration and sand volumes

Typically scheduled months or even years ahead

LIDAR – underexploited technology

- Surveys of beaches every 5-7 years cannot support effective regional sediment management (4 times a year?)
- A national central LIDAR facility is an inefficient arrangement to meet needs of the Districts
- Regional facilities can provide more frequent surveys and rapid-response to major storm effects

The Engineering Model Gap

- District engineers need robust models that run on PCs, not supercomputers
- Models need to be physics-based so that they can predict reasonable results in any location
- Models need to be thoroughly tested and their performance validated in a variety of settings
- No models exist

The Data-for-Models Gap

- Most data sets used in the past were inadequate
- A very limited number of adequate sets exist
- They need to be multi-year, high resolution and regionally diverse
- They should support both alongshore and cross-shore models
- No funding to develop new sets

Summary

- Need a huge investment to meet NOWOP wave data standards
- No comprehensive atlas of coastal condition
- LIDAR unable to meet District needs for seasonal or storm-caused regional change
- No engineering models for beaches
- No data to validate models